

REMARKS

The claims have been revised to address the rejection of the claims, set forth in the Official Action of February 25, 2003, and the amendments are further addressed, below. In addition, claim 42 has been added. Support may be found, at least, at page 11, lines 14-18.

Turning to the Official Action of February 25, 2003, claims 39 and 40 were rejected under 35 U.S.C. §§112, second paragraph and 101, for the reasons set forth at page 2 of the Official Action. In this regard, the Examiner's suggestion with respect to claims 39 and 40 has been adopted. Thus, withdrawal of this rejection is in order and it is respectfully requested.

Claims 1-7 and 24-41 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Dudovicz et al (WO 99/06182) in view of Birang (EP 0 738 561 A1), and further in view of Engdahl et al (U.S. Patent No. 6,336,845 B1). This rejection is traversed for the following reasons.

The present invention relates to equipment for processing wafers. In particular, it relates to a belt for chemical mechanical polishing of wafers.

In one aspect of the invention, and as set forth in independent claim 1, a polishing pad for polishing a workpiece in a linear chemical mechanical polishing system is provided. The chemical mechanical polishing system includes a side opposite the polishing surface, the belt forming an endless loop. The system further includes at least one aperture from the polishing surface through the side opposite the polishing surface so that the aperture is substantially free of a window, the aperture positioned on the belt to allow monitoring of the workpiece through the aperture; one of a notch along a first edge of the belt and trigger hole, the notch or trigger hole positioned relative to the aperture; a monitor positioned to sense the workpiece through the aperture; and a sensor positioned such that passing of the trigger hole or notch activates the monitor.

Dudovicz et al relates to an integrated, endless belt with a seamless polishing surface for a belt-type polishing machine including a support fabric and a polymer layer that acts as the polishing surface. See Abstract.

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Dudovicz et al does not disclose or fairly teach the features of the claimed invention. For example, Dudovicz et al does not disclose or fairly suggest an aperture extending from the polishing surface through the opposite side of the polishing surface so that the aperture is substantially free of a window, and positioned on the belt to allow monitoring of the workpiece through the aperture. In this regard, the Official Action relies on an isolated mention that the belt in Dudovicz et al “may have holes.” Official Action at page 3. However, in determining the differences between the prior art and the claims, the question under 35 U.S.C. §103 is not whether the difference themselves would have been obvious, but whether the claimed invention as whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530 (Fed. Cir. 1983). Distilling an invention down to the “gist” or “thrust” of an invention disregards the requirement of analyzing the subject matter “as a whole.” *W.R. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983). Here, the Dudovicz et al does not even remotely address monitoring the workpiece through such an aperture, much less an aperture, free of a window, where the slurry may leak through the aperture to the monitor or the platen. In fact, a skilled artisan would not have relied on Dudovicz for the purported apertures, based on the disclosure that the belt “may have holes” without improper hindsight gained from Applicants’ disclosure.

Birang relates to semiconductor manufacture, and more particularly, to an apparatus and method for chemical mechanical polishing (CMP) and in-situ endpoint detection during the CMP process. Recognizing that Dudovicz does not disclose an aperture for monitoring the workpiece, Birang has been relied on for allegedly disclosing a “hole (30) that is ‘positioned such that it has a view of the wafer’”. Official Action at page 3. However, Birang does not cure the above-described deficiencies in Birang. In this regard, Birang states:

[T]he platen hole 30 has a stepped diameter, thus forming a shoulder 36. The shoulder 36 is used to contain and hold a quartz insert 38 which functions as a window for the

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laser beam 34. The interface between the platen 16 and the insert 38 is sealed, so that the portion of the chemical slurry 40 finding its way between the wafer 14 and insert 38 cannot leak through the bottom of platen 16. Col. 9, lines 44-50. (Emphasis added.)

Clearly, the Birang discloses a quartz insert which is sealed therein, forms a window. Quite to the contrary, the present invention recites an aperture substantially free of a window. Thus, one of ordinary skill in the art would not have arrived at the claimed invention by combining the disclosure of these documents. Moreover, the Official Action's reliance on Birang for viewing the workpiece, is improperly relied on, as it isolates one feature of Birang while simply ignoring the fact that an aperture with a window is utilized therein.

The tertiary document, Engdahl et al, likewise does not cure the deficiencies of the primary document. Engdahl et al relates to planarization of semiconductors using a chemical mechanical planarization technique. Col. 1, lines 5-7.

Like Dudovicz et al and Birang, Engdahl et al does not disclose or suggest belt having an aperture extending from the polishing surface through the opposite side of the polishing surface so that the aperture is substantially free of a window, and positioned on the belt to allow monitoring of the workpiece through the aperture. By comparison, the polishing belt 178 in Engdahl et al appears to be made of a solid material. See col. 13, line 2-19 and Fig. 20. Accordingly, Engdahl et al does not disclose a polishing belt with apertures therein, which are substantially free of windows, nor does it disclose the monitoring of workpieces therethrough.

It should be clear from the foregoing that the differences between the claimed subject matter and the applied art are such that the claimed subject matter, as a whole, would not have been obvious at the time the invention was made to a person having ordinary skill in the art. Simply put, there is no suggestion to do what Applicants have done.

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From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at his/her earliest convenience.

Respectfully submitted,



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